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EXAMINER	
SHIBUYA, MARK LANCE	
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1639	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,269	SCHULZ ET AL.	
	Examiner	Art Unit	
	Mark L. Shibuya, Ph.D.	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/23/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *25-43* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24,44 and 45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Application 10/820,269, (20050047973 A1): Claims 1-45 are pending. Claims 25-43 are withdrawn. Claims 1-24, 44 and 45 are examined.

2. The examiner of record has changed.

Priority

3. This application, 10/820,269, filed 4/8/2004, states that it is a continuation of PCT/EP02/11313, filed 4/17/2003. This application, 10/820,269, states that it claims foreign priority to German document DE 101 49 684.2, filed 10/9/2001.

4. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Germany on 10/9/2001. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Withdrawn Claim Objections/Rejections

5. The following objections/rejections to the claims are withdrawn in view of applicant's arguments.

6. Claims 1-24, 44-45 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims Rejections – 35 U.S.C. 112, Second Paragraph

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 44-45 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 44 states the term "may be", which renders the claims vague and indefinite. It is unclear whether the chamber space of claim 44 is filled free of air bubbles or not.

Claims Rejections- 35 U.S.C. 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-24, 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al., US 2006/0160205 A1, (of record), and in view of Ehricht et al., US 2002/0150933 (of record) and Lipshutz et al., (US Patent 5,856,174 (of record).

The claims are drawn to a device for holding a substance library carrier, comprising a lid element having a detection surface with a substance library on its underneath side and being optically translucent at least in an area of the detection

surface, a sealing intermediate element having an enclosed recess, and a base element being optically translucent at least in an area of the detection surface of the lid element, wherein the lid, intermediate element and base together form an optically translucent chamber having a chamber space, and variations thereof. Claims 44 and 45 are drawn to a device for filling a second device as described in claim 1.

Blackburn et al., US 2006/0160205 A1, throughout the publication, and at p. 7, para [0080]-[0082] teach cartridges comprising a reaction chamber that contains a biochip array, i.e., library. Blackburn at para [0088] teach inlet ports comprising a seal, and wherein the seal comprises a gasket, reading on a sealing intermediate, through which a pipette or syringe can be pushed. Blackburn et al., at para [0132] teaches a biochip substrate that can serve as one half of the reaction chamber, with the array on the inside, and the housing serving as the other half. Blackburn at para [0134] teaches a reaction chamber entirely of plastic or glass. Blackburn at para [0136] teaches cartridges that comprise a lid, and wherein the lid can take on a wide variety of configurations.

For claims 44 and 45, the device (for filling a second device) wherein the body contains recesses for a filling unit, a ventilation unit and the second device, and wherein the recesses are arranged such that the sample chamber of the second device may be loaded and vented through puncturing of the intermediate element from its side. In Figs 1B and 1D, (see column 1, paragraph 10), it is shown an outlet port is positioned at the top and vents outside. Also shown in Figure 1C, the outlet port is located to the side of the chamber. Blackburn et al., also teaches in column 5, paragraph 62, the chips can

include reaction chamber with inlet and outlet ports for the introduction and removal of reagents. In column 8, paragraph 91 and column 9, paragraph 91, Blackburn teaches the biochip or cartridge may have a vent. In column 8, paragraphs 88 and 89, Blackburn et al., discloses the inlet port may comprise a seal to prevent or reduce the evaporation of the sample or reagents from the reaction chamber, and the seal comprises a gasket, or valve through which a pipette or syringe can be pushed (thus puncturing the layer); also, a systems is used wherein the exit port vents to the inlet port, preferably above the point of loading. In column 8, paragraph 91, it is taught by Blackburn et al., that the biochip cartridge is designed to include one or more loading ports or valves that can be closed off or sealed after the sample is loaded and the biochip my have a vent. It is also shown, in column 3, paragraph 30, that the ventilation unit also comprises a second cannula. In this example, the use of a pipette tip can serve as a second cannula for loading a sample into a sample introduction chamber (loading into a recess as in claim 45; see Figures 15A and 15C). Finally, in column 11, paragraph 131, Blackburn et al., disclose that the cartridge or biochip comprises a sealing and/or venting mechanism to prevent the cartridge from exploding or to prevent leakage.

Blackburn at para [0106] teaches off chip pumps, reading on the first device of claim 44. Blackburn at Fig. 15C teaches a first device containing recesses for a filling unit. The pipette tip also would act as a ventilation unit to allow infusion of liquid.

Blackburn et al., at para [0129], teach a variety of reaction chamber geometries to allow for smooth loading of the reaction chambers.

Blackburn does not explicitly teach a lid with a substance library on its underneath side and a lid and base element being optically translucent at least in an area of the detection surface.

Ehricht et al., throughout the publication, column 4, paragraph 55-58, and column 5, paragraphs 61-62) disclose a device (see Figure 1) for duplicating and characterizing nucleic acids, consists of a chamber body and a chamber support. Ehricht et al., also disclose a device for holding a chip (e.g. a nucleic acid chip or substance library see column 4, paragraph 55).

Ehricht also discloses two holding elements that are fixable with each other (for example, see figure 1 wherein the "two sides" of element 42 represent "holding elements" and they are "fixed" at a distance that is equal to the length of element 2. Ehricht also discloses an element that is optically translucent at least in an area of the detection surface (see column 4, paragraphs 56 and 58). Ehricht et al., further disclose a sealing intermediate having an enclosed recess (column 3 paragraph 24; column 4, paragraph 55; and column 5, paragraph 68), a chamber body and chamber support wherein the chamber body is provided with a bearing surface via which chamber body is in a sealing connection with chamber support, so that a sample chamber is formed. Ehricht et al., disclose that the lid element, the intermediate element and the base element together form an optically translucent chamber having a chamber space (see figures 1-3).

For claim 2, Ehricht et al., discloses a device wherein the base element comprises an integrated heating-temperature sensor device. Ehricht et al., teaches

(see column 3, paragraphs 31-32) that by means of the device, the PCR and the hybridization parallel to chip-bound nucleic acid are spatially combined in a temperature controllable and throughput controllable cell (chamber). Ehricht et al., also discloses heating and cooling elements which are placed on a chamber support together with temperature sensors and electrodes, which chamber support holding the chamber and being in a heat-conducting contact with same through the chamber bottom.

For claim 3, a device wherein the base element comprises monocrystalline silicon, Ehricht et al., discloses in column 4, paragraph 58 that the chip consists in a known manner of an optically transparent support, the material of which, for example, can be silicon or glass.

For claim 4, a device wherein the lid element comprises Borofloat 33, Ehricht discloses (see column 4, paragraph 57) the chip can preferably be made of borofloat glasses.

For claim 7, a device wherein the recess defines a geometrical form of the chamber space. The examiner concludes that the geometrical form is meant to represent the arrangement of the library on the chip with respect to the recess. Ehricht et al., discloses (see abstract and column 4, paragraph 56) that the detection surfaces of the chip (in the form of spots) is mounted in the chamber body with a recess whose edge sealing holds an optically transparent chip consisting of individual spots on a detection surface in such a way that the detection surfaces in the form of spots are positioned opposite and facing the surface of the chamber support by edge of the

chamber support. Finally, column 5, paragraph 69 (Figure 3) discloses the recess across which detection surfaces including spots of the chip is optically accessible.

For claim 8, wherein the chamber space may be filled free of air bubbles, Ehricht et al., discloses in column 6, paragraph 77 that contingent air bubbles can be discharged from capillary gap into gas reservoir of sample chamber.

For claim 10, a device wherein the chamber may be cooled, Ehricht et al, discloses in column 3, paragraph 31 that the device can be used for PCR, thus as a thermocycler which can ramp between various temperatures. Ehricht et al., also teaches that by means of the device, PCR and hybridization parallel to chip-bound nucleic acid are spatially combined in a temperature-controllable and throughput controllable cell (chamber). In column 5, paragraph 63, Ehricht et al., also teaches that the heating elements can be preferably selected so that a fast heating and cooling of the liquid (in the capillary gap) is possible.

For claim 12, a device wherein the holding elements each comprise channels for cooling the chamber, Ehricht et al., discloses (see Fig 4 and column 5, paragraph 63) that the heating elements can be preferably selected so that a fast heating and cooling of the liquid in the capillary gap is possible. They further teach (Fig 4, column 5, paragraph 70) that the heating elements situated at the lower side of the (transparent) chamber support including conducting paths and connecting surfaces. Conducting paths are synonymous with channels.

For claims 18-24, a device which contains a protein, antibody, peptide, receptor/ligand, hormone, nucleic acid, DNA or RNA library, Ehricht et al., (see column

4, paragraph 57) disclose a chip that is preferentially functionalized by nucleic acid molecules, in particular by DNA or RNA molecules. However, the chips can likewise be functionalized by peptides and/or proteins such as, for example antibodies, receptors molecules, and pharmaceutically active peptides and/or hormones. Also, see the abstract where it teaches a device consists of a chamber body with a recess whose edge sealingly holds an optically transparent chip. Said chip holds nucleic acids (DNA or RNA) in individual spots on a detection surface.

Ehricht et al., teaches every element of claims 1-4, 7-8, 10, 12, 18-24; therefore these claims are rejected under 35 USC § 102e.

Lipshutz et al., (US Patent 5,856,174 (5 January, 1999), throughout the patent and at col. 18, lines 5-19, teach reaction chambers incorporating a sealable closure or septum, through which a sample may be introduced or injected. Lipshutz at col. 11, teach detection of hybridization upon arrays using optical methods, such as epifluorescence confocal microscopy. Lipshutz at col. 12, lines 16-30, teach production of arrays by etching onto the same polymeric materials used for the fabrication of the body of their device.

Lipshutz et al., teaches in column 19, lines 20-29, a device for holding a substance library carrier having two holding elements that are fixable with each other and comprising a lid and base that are optically transparent in at least one area of detection and having a sealing intermediate element with an enclosed recess,; discloses the use of an oligonucleotide array (substance library carrier) as the bottom

surface of a chamber. In column 27, lines 1-3; Lipshutz et al., disclose that the base unit may include a second surface which contacts the opposite surface of the device from the first surface, or one surface is "fixable" with a second surface. The device is made up of multiple chambers and at least one chamber will typically have as at least one surface, a transparent window for observation or scanning. Having "at least one transparent surface" implies there can be two surfaces that are transparent. Therefore, it would have been obvious to place the second transparent surface in the base, especially if the windows are to be used for viewing and scanning because the standard is to perform those two functions from opposite sides of the substance library. In column 18, lines 1-4; Lipshutz et al., teaches that the body of the device incorporates reaction chambers that are connected in series. In Column 19, lines 59-64, Lipshutz also discloses that the chambers included in the device of the invention have a centralized geometry having a central chamber for gathering and distribution of a fluid sample to a number of separate reaction/storage/analytical chambers arranged around, and fluidly connected to the central chamber.

For claim 3, a device wherein the base element comprises monocrystalline silicon, in column 14, lines 35-45, the reference teaches the body of the device is generally fabricated using one or more of a variety of methods and materials suitable for microfabrication techniques. For example, the body of the device may comprise a number of planar members that may individually be injection molded parts fabricated from a variety of polymeric materials, or may be silicon, glass, or the like. In the case of crystalline substrates like silica, glass, or silicon, methods for etching, milling, drilling,

etc., may be used to produce wells and depressions which makeup the various reaction chambers and fluid channels within the device.

For claim 9, a device wherein the chamber space is formed in the shape of a D, a new moon, or a sickle, Lipshutz, et al., teaches in column 14, lines 15-17; the body of the device may be embodied in any number of shapes depending upon the particular need. Thus, this anticipates a chamber space being formed in any shape.

For claim 10, the chamber may be cooled, Lipshutz et al., in column 2, line 55 teaches a chamber that can be temperature controlled. In column 19, lines 1-4; column 25, lines 6-8; column 27, 37-47, teach the device can be used for thermal cycling of the sample. One skilled in the art would know that this means rapid heating of cooling of the sample in a particular chamber to carry out an amplification reaction.

For claim 14, a device comprising a media connection for heating the chamber, and a media connection for cooling the chamber and a recess for receiving an injection apparatus, all of which are located on one side of the device, Lipshutz further discloses (see column 4, lines 40-45 and 55-64) chambers and components may also be included to provide reagents, buffers, sample manipulation, e.g., mixing, pumping, fluid direction (i.e. valves) heating and the like. It also discloses injecting the sample into the collection chamber through a sealable opening, e.g. an injection valve, or a septum. Alternatively, the device may be provided with a hypodermic needle integrated within the device and connected to the sample collection chamber.

For claims 15-17, a device with is attached to a connector and may be operated fully automatically through the connector and which is attached to a manual filling

station, Lipshutz et al, (see column 4, lines 16-45) discloses that the device will typically be one component of a larger diagnostic system that includes among other things a computer based interface for controlling the device. Furthermore, in Lipshutz, et al., (see column 5, lines 6-11) disclose that the reagents may generally be stored within the sample collection chamber of the device, or may be stored within a separately accessible chamber wherein the reagents may be added to or mixed. Finally, in column 5, lines 46-48, Lipshutz teach that the appropriate reagents may be incorporated within the [extraction] chamber or externally introduced.

For claims 44, 45 the device previously described above, and a second device wherein the sample chamber of the second device may be loaded and vented through puncturing of the intermediate element from its side. Lipshutz et al, (see column 4, lines 56-64) discloses the sample may be directly injected into the collection chamber through a sealable opening, e.g., an injection valve, or a septum. The device may also be provided with a hypodermic needle integrated within the device and connected to the sample collection chamber.

It would have been *prima facie* obvious, at the time the invention was made, for one of ordinary skill in the art to have made and used a device comprising a lid with a substance library on its underneath side and a lid and base element being optically translucent at least in an area of the detection surface; and another device for filling the aforementioned device as described in claim 1.

One of ordinary skill in the art would have been motivated to make and use a device comprising a lid with a substance library on its underneath side and a lid and

base element being optically translucent at least in an area of the detection surface because there is no difference between a base and a lid of the claimed invention, except that the lid has the library. The prior art reference of Lipshutz teaches and suggests the etching of an array into a portion of the chamber, so that it may be considered that that portion would suggest the lid of the instant invention. Furthermore, Lipshutz and Ehricht teach and suggest translucent reaction chambers in order to detect binding using light microscopy.

Conclusion

11. Claims 1-24, 44 and 45 are rejected.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shibuya, Ph.D. whose telephone number is (571) 272-0806. The examiner can normally be reached on M-F, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. James Douglas Schultz can be reached on (571) 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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